

## Building Air Quality Action Plan Verification Checklist

STEP 1: DESIGNATE AN IAQ MANAGER	For Guidance, refer to:
<input type="checkbox"/> (1) An IAQ Manager has been designated. Name: Title:	<i>Building Air Quality</i> , Page 33
<input type="checkbox"/> (2) The IAQ Manager has been educated on the contents of <i>Building Air Quality: A Guide for Building Owners and Facility Managers</i> by reading it carefully and possibly receiving training on the fundamentals of IAQ. Notes: _____ _____ _____ _____	Some training courses and materials are listed in Appendix 2 of this publication, Page 28
STEP 2: DEVELOP AN IAQ PROFILE OF YOUR BUILDING	For Guidance, refer to:
1. Identify and Review Existing Records	<i>Building Air Quality</i> , Pages 19–22
<input type="checkbox"/> (3) Up-to-date manufacturers' operating instructions and maintenance records for HVAC system components have been reviewed and filed.	<i>Building Air Quality</i> , Page 21 (note-box)
<input type="checkbox"/> (4) Up-to-date schedules and procedures for facility operations and maintenance have been reviewed and filed	<i>Building Air Quality</i> , Page 21
<input type="checkbox"/> (5) HVAC "as built" blueprints have been updated to indicate current HVAC configuration and filed	<i>Building Air Quality</i> , Page 21
<input type="checkbox"/> (6) Drawings of tenant build-out and interior building renovations have been updated and	<i>Building Air Quality</i> , Page 21
<input type="checkbox"/> (7) Information on major space use changes (e.g., office space to kitchen or laboratory, significant increases or decreases in occupant density) has been updated and filed.	<i>Building Air Quality</i> , Page 22
<input type="checkbox"/> (8) The HVAC system was designed to deliver _____ CFM of outside air which translates into _____ CFM of outside air per occupant.	<i>Building Air Quality</i> , Pages 8, 136, and 137
<input type="checkbox"/> (9) The HVAC system is actually delivering _____ CFM of outside air which translates into _____ CFM of outside air per occupant.	<i>Building Air Quality</i> , Pages 8, 136-7 and Ventilation Worksheet, Pages 169 and 179 (to be used in conjunction with Zone/Room Record Form, Page 177)
<input type="checkbox"/> (10) A review of occupant thermal comfort complaints and indoor temperature and relative humidity readings indicates that current peak heating and cooling loads do not exceed HVAC system capacity.	<i>Building Air Quality</i> , Page 122
<input type="checkbox"/> (11) Information on pressure relationships between areas and/or zones within the building has been examined, updated, and filed.	<i>Building Air Quality</i> , Pages 8–10 and Pollutant Pathway Record Form, Pages 169 and 175
<input type="checkbox"/> (12) The building's most recent test and balancing report has been filed. Date of report: _____	<i>Building Air Quality</i> , Pages 21 and 123
<input type="checkbox"/> (13) Material Safety Data Sheets (MSDS) for products used in the building are requested from suppliers and kept on file.	<i>Building Air Quality</i> , Pages 28, 35, and 39; 29 CFR 1910.1200 Hazardous Communication Standard, OSHA
<input type="checkbox"/> (14) Documentation of HVAC control system set points and ranges has been reviewed and	<i>Building Air Quality</i> , Pages 21 (text-box)
<input type="checkbox"/> (15) The building records (items #3-14) listed above are revised as needed, particularly at the conclusion of any renovation/construction activities.	<i>Building Air Quality</i> , Pages 21-22

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STEP 2: DEVELOP AN IAQ PROFILE OF YOUR BUILDING (continued)	For Guidance, refer to:
<p><u>2. Conduct a Walkthrough to Assess the Current IAQ Situation</u></p>	
<input type="checkbox"/> (16) A building walkthrough inspection has been conducted, including both occupied areas and mechanical rooms.	<i>Building Air Quality</i> , Pages 22–29
<input type="checkbox"/> (17) During the walkthrough, a pollutant/source inventory has been completed.	<i>Building Air Quality</i> , Pollutant Source Inventory Form, Page 26, and Pages 213–219
<p>During the walkthrough, IAQ problem indicators have been checked for and noted on a floor plan or comparable drawing, including:</p>	<i>Building Air Quality</i> , Pages 23–25
<input type="checkbox"/> (18) • Odors	<i>Building Air Quality</i> , Pages 23–25
<input type="checkbox"/> (19) • Dirty or unsanitary conditions	"
<input type="checkbox"/> (20) • Visible fungal growth or moldy odors	"
<input type="checkbox"/> (21) • Evident moisture in inappropriate locations (e.g., moisture on walls, floors, or	"
<input type="checkbox"/> (22) • Staining or discoloration of building material(s)	"
<input type="checkbox"/> (23) • Smoke damage	"
<input type="checkbox"/> (24) • Presence of hazardous substances	<i>Building Air Quality</i> , Pages 23-25 and Chemical Inventory Form, Pages 169 and 221
<input type="checkbox"/> (25) • Potential for soil gas entry (e.g., cracks or holes in building surfaces adjacent to	<i>Building Air Quality</i> , Pages 23–25
<input type="checkbox"/> (26) • Unusual noises from light fixtures or equipment	"
<input type="checkbox"/> (27) • Poorly-maintained filters	"
<input type="checkbox"/> (28) • Uneven temperatures	"
<input type="checkbox"/> (29) • Overcrowding	"
<input type="checkbox"/> (30) • Personal air cleaners (e.g., ozone generators, portable filtration units) or fans	"
<input type="checkbox"/> (31) • Inadequate ventilation	"
<input type="checkbox"/> (32) • Inadequate exhaust air flow	"
<input type="checkbox"/> (33) • Blocked vents	"
<input type="checkbox"/> (34) • Other conditions that could impact IAQ, especially risk factors that need regular inspection to prevent IAQ problems from occurring (e.g., drain pans that do not fully drain).	"
<p>The condition and operations of the HVAC system have been inspected, including:</p>	<i>Building Air Quality</i> , Page 25 and HVAC Checklist - Long Form, Pages 169 and 170
<input type="checkbox"/> (35) • Components that need to be repaired, adjusted, cleaned, or replaced have been and work orders prepared.	<i>Building Air Quality</i> , Pages 23–25
<input type="checkbox"/> (36) • Actual control settings and operating schedules for each air handling unit have been recorded and filed, and checked against the design intent.	"
<input type="checkbox"/> (37) Areas with significant sources of contaminants (e.g., copy rooms, food service areas, printing/photographic areas) are provided with adequate exhaust. Other sources are moved as close to exhaust as possible.	<i>Building Air Quality</i> , Page 25
<p>Notes: _____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>	

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STEP 3: ADDRESS EXISTING AND POTENTIAL IAQ PROBLEMS	For Guidance, refer to:
<p>Identified IAQ problems have either been corrected or steps have been taken to control them, including:</p> <p><input type="checkbox"/> (38) • Source-related IAQ problems</p> <p><input type="checkbox"/> (39) • Ventilation-related IAQ problems.</p> <p><input type="checkbox"/> (40) Weaknesses have been identified and steps taken to prevent them from becoming</p> <p>Notes: _____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p><i>Building Air Quality</i>, Pages 45–108</p> <p><i>Building Air Quality</i>, Pages 45–108</p> <p><i>Building Air Quality</i>, Pages 45–108</p> <p><i>Building Air Quality</i>, Pages 45–108</p>
STEP 4: EDUCATE BUILDING PERSONNEL ABOUT IAQ MANAGEMENT	For Guidance, refer to:
<p><input type="checkbox"/> (41) In-house and contractor personnel whose functions could impact IAQ (e.g., housekeeping staff, maintenance contractors) have been identified.</p> <p><input type="checkbox"/> (42) IAQ training or information has been provided to in-house personnel and contractors -- especially regarding use of hazardous chemicals. Additional training or information is provided periodically, and plans for continual improvement have been established.</p> <p>Notes: _____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p><i>Building Air Quality</i>, Pages 23 and 32–34</p> <p><i>Building Air Quality</i>, Pages 33–34 and 167; 29 CFR 1910.1200 Hazard Communication Standard, OSHA.</p>
STEP 5: DEVELOP AND IMPLEMENT A PLAN FOR FACILITY OPERATIONS AND MAINTENANCE	For Guidance, refer to:
<p>1. HVAC Operations</p> <p><input type="checkbox"/> (43) Operating schedules for HVAC equipment, ensuring that the HVAC system is operating during significant occupancy periods, have been written and are updated as needed.</p> <p><input type="checkbox"/> (44) The HVAC operating schedule provides for an adequate flush of the building, with as much outside air as is feasible, prior to occupants' arrival.</p> <p>Notes: _____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p><i>Building Air Quality</i>, Page 34</p> <p><i>Building Air Quality</i>, Page 34 and ASHRAE Standard 62-1989, or latest publication (see Appendix 3, Page 30)</p>

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STEP 5: DEVELOP AND IMPLEMENT A PLAN FOR FACILITY OPERATIONS AND MAINTENANCE For Guidance, refer to: (continued)	
<p>2. Housekeeping</p> <p><input type="checkbox"/> (45) All housekeeping equipment and products used in the building are known to the IAQ Manager.</p> <p><input type="checkbox"/> (46) The products used in this building that may produce strong odors, are potential irritants, or may have other IAQ impacts have been determined and, where possible, have been replaced by products without such impacts.</p> <p><input type="checkbox"/> (47) Housekeeping procedures that detail proper use, storage, and purchase of cleaning materials have been written and are updated as needed.</p> <p style="padding-left: 20px;">The housekeeping staff or contractors have been educated about the IAQ implications, appropriate use, and application of the following to improve IAQ:</p> <p><input type="checkbox"/> (48) • Proper cleaning methods</p> <p><input type="checkbox"/> (49) • Cleaning schedules</p> <p><input type="checkbox"/> (50) • Purchasing</p> <p><input type="checkbox"/> (51) • Proper materials storage and use</p> <p><input type="checkbox"/> (52) • Proper trash disposal.</p> <p style="text-align: center;"><u>3. HVAC Preventive Maintenance</u></p> <p><input type="checkbox"/> (53) A preventive maintenance plan that includes equipment maintenance schedules has been written or computerized and is followed and updated as needed.</p> <p style="padding-left: 20px;">A preventive maintenance plan or contract includes at least the following maintenance</p> <p><input type="checkbox"/> (54) • Outside air intakes (inspected for nearby sources of contaminants)</p> <p><input type="checkbox"/> (55) • Air distribution dampers (cleared of obstruction and operating properly)</p> <p><input type="checkbox"/> (56) • Air filters (pressure drops monitored, replacement or cleaning performed regularly)</p> <p><input type="checkbox"/> (57) • Drain pans (inspected and cleaned to ensure proper drainage)</p> <p><input type="checkbox"/> (58) • Heating and cooling coils (inspected and cleaned)</p> <p><input type="checkbox"/> (59) • Interior of air handling units (inspected and cleaned, as warranted)</p> <p><input type="checkbox"/> (60) • Fan motor and belts (inspected)</p> <p><input type="checkbox"/> (61) • Air humidification and controls (inspected and regularly cleaned)</p> <p><input type="checkbox"/> (62) • Cooling tower (inspected, cleaned, and water treated according to schedule)</p> <p><input type="checkbox"/> (63) • Air distribution pathways and VAV boxes (inspected and cleaned as needed).</p> <p><input type="checkbox"/> (64) The preventive maintenance plan and operations manuals are updated when equipment is added, removed, or replaced.</p> <p style="text-align: center;"><u>4. Unscheduled Maintenance</u></p> <p><input type="checkbox"/> (65) Procedures for unscheduled maintenance events (e.g., equipment failure) have been written and communicated to building staff. They include:</p> <p><input type="checkbox"/> (66) • Building maintenance personnel immediately tell the IAQ Manager that an maintenance event has occurred.</p> <p><input type="checkbox"/> (67) • Notification to occupants/tenants is provided in a timely manner, addressing how quality is being protected.</p> <p><input type="checkbox"/> (68) • Necessary remedial action is taken.</p> <p>Notes: _____</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p><i>Building Air Quality, Pages 36-37</i></p> <p><i>See Material Safety Data Sheets</i></p> <p><i>Building Air Quality, Pages 36-37</i></p> <p><i>Building Air Quality, Pages 36-37</i></p> <p style="text-align: center;">"</p> <p style="text-align: center;">"</p> <p style="text-align: center;">"</p> <p style="text-align: center;">"</p> <p style="text-align: center;">"</p> <p><i>Building Air Quality, Pages 34, 35, 36, 43, and 121-139</i></p> <p><i>Building Air Quality, Page 36</i></p> <p><i>Building Air Quality, Pages 124-125</i></p> <p><i>Building Air Quality, Pages 125-126</i></p> <p><i>Building Air Quality, Pages 126-128</i></p> <p><i>Building Air Quality, Page 128</i></p> <p><i>Building Air Quality, Page 128</i></p> <p><i>Building Air Quality, Pages 25, 26, 35,</i></p> <p><i>Building Air Quality, Page 130</i></p> <p><i>Building Air Quality, Pages 129-130</i></p> <p><i>Building Air Quality, Page 135</i></p> <p><i>Building Air Quality, Pages 25-26, 36, 123-126, and 130-133</i></p> <p><i>Building Air Quality, Page 35</i></p> <p><i>Building Air Quality, Page 32-35, 67</i></p> <p style="text-align: center;">"</p> <p style="text-align: center;">"</p> <p style="text-align: center;">"</p>

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STEP 6: MANAGE PROCESSES WITH POTENTIAL SIGNIFICANT POLLUTANT SOURCES	For Guidance, refer to:
<p><u>General</u></p>	
<input type="checkbox"/> (69) When new products are purchased, information on potential indoor air contaminant emissions is requested from product suppliers.  <p><i>[Note: Emission information may not be readily available for many products at this time, however information that is available should be collected.]</i></p>	<p><i>Building Air Quality, Page 37</i></p>
<input type="checkbox"/> (70) When the services of architects, engineers, contractors, and other professionals are used, IAQ concerns, such as special exhaust needs, are discussed.  <p>1. Remodeling and Renovation</p>	<p><i>Building Air Quality, Page 40</i></p>
<input type="checkbox"/> (71) Special procedures to minimize the generation and migration of contaminants or odors to occupied areas of the building are used (or required of contractors).  <p>The special procedures used in this building are:</p>	<p><i>Building Air Quality, Pages 6,40, and 99</i></p>
<input type="checkbox"/> (72) • The IAQ Manager reviews designs and construction activities for all proposed remodeling and renovation activities prior to their initiation <input type="checkbox"/> (73) • Work is scheduled during periods of minimum occupancy <input type="checkbox"/> (74) • Ventilation is provided in order to isolate work areas <input type="checkbox"/> (75) • Lower-emitting work processes are used (e.g., wet-sanding dry wall) <input type="checkbox"/> (76) • Specialized cleaning procedures are used (e.g., use of HEPA vacuums) <input type="checkbox"/> (77) • Filters are changed more frequently, especially after work is completed <input type="checkbox"/> (78) • Emissions from new furnishings are minimized (e.g., buying lower-emitting products, airing out furnishings before installation, increased amount and duration of after installation)	<p><i>Building Air Quality, Pages 6,40, &amp; 99</i></p> <p style="text-align: center;">"</p> <p style="text-align: center;">"</p> <p style="text-align: center;">"</p> <p style="text-align: center;">"</p> <p style="text-align: center;">"</p> <p style="text-align: center;">"</p>
<input type="checkbox"/> (79) • Ventilation and distribution equipment are protected.  <p>2. Painting</p>	<p style="text-align: center;">"</p>
<input type="checkbox"/> (80) Occupants' exposure to paint vapors is minimized by using low-emitting products, scheduling work during periods of minimum occupancy, or increasing ventilation.  <p>3. Pest Control</p>	<p><i>Building Air Quality, Pages 6,40, &amp; 99</i></p>
<input type="checkbox"/> (81) Integrated Pest Management procedures are used to the extent possible: <input type="checkbox"/> (82) • The pest control products being used in the building are known. <input type="checkbox"/> (83) • Either by written procedures or contract language, it is ensured that all people who use pest control products read and follow all label directions for proper use, mixing, storage and disposal.	<p><i>Building Air Quality, Page 38</i></p> <p style="text-align: center;">"</p>
<input type="checkbox"/> (84) • Non-chemical pest control strategies are used where possible. <input type="checkbox"/> (85) • The safest available pest control products that meet the building's needs are or reviewed with pest control contractor.	<p style="text-align: center;">"</p> <p style="text-align: center;">"</p>
<p>4. Shipping or Receiving</p>	
<input type="checkbox"/> (86) Vehicle exhaust has been prevented from entering the building (including through air intakes and building openings) by installing barriers to airflow from loading dock areas (e.g., doors, curtains, etc.) and using pressurization. <p>Notes: _____</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p><i>Building Air Quality, Page 37</i></p>

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STEP 6: MANAGE PROCESSES WITH POTENTIAL SIGNIFICANT POLLUTANT SOURCES (continued)	For Guidance, refer to:
<p><u>5. Smoking</u></p> <p><input type="checkbox"/> (87) A. Smoking is prohibited in all portions of this building, including tenant occupied space.</p> <p style="text-align: center;">OR</p> <p><input type="checkbox"/> (88) B. If smoking is permitted in the building, all smoking areas are exhausted directly to the outside, are maintained under negative pressure relative to adjacent space, and are with 60 CFM per occupant of make-up air (can be supplied by transfer air).</p> <p>Notes: _____</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>"What You Can Do About Secondhand Smoke", EPA 1993</p> <p>ASHRAE Standard 62-1989 (see Appendix 3, Page 30), and "What You Do About Secondhand Smoke," EPA</p>
STEP 7: COMMUNICATE APPROPRIATELY WITH TENANTS/OCCUPANTS ABOUT THEIR ROLE IN MAINTAINING GOOD IAQ	For Guidance, refer to:
<p><input type="checkbox"/> (89) Tenants or occupants are routinely informed about building conditions and policies that may impact IAQ (e.g., practices that attract insects or smoking policy clarifications).</p> <p><input type="checkbox"/> (90) Tenants or occupants are notified in advance of major renovation, remodeling, maintenance or pest control activities.</p> <p>Notes: _____</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p><i>Building Air Quality</i>, Pages 14 and 40</p> <p><i>Building Air Quality</i>, Page 14</p>
STEP 8: ESTABLISH PROCEDURES FOR RESPONDING TO IAQ COMPLAINTS	For Guidance, refer to:
<p>Clear procedures for responding to IAQ complaints have been written and are followed, including:</p> <p><input type="checkbox"/> (91) • Entries such as IAQ problems are logged into the existing work-order system.</p> <p><input type="checkbox"/> (92) • Information is collected from complainants.</p> <p><input type="checkbox"/> (93) • Information and records obtained from complainants are kept confidential.</p> <p><input type="checkbox"/> (94) • The capability of in-house staff to respond to complaints is assessed.</p> <p><input type="checkbox"/> (95) • Appropriate outside sources of assistance are identified.</p> <p><input type="checkbox"/> (96) • Feedback is provided in a timely manner to complainant.</p> <p><input type="checkbox"/> (97) • Remedial actions are taken.</p> <p><input type="checkbox"/> (98) • Remedial actions are followed-up to determine if the action has been effective.</p> <p><input type="checkbox"/> (99) Building staff have been informed of these procedures.</p> <p><input type="checkbox"/> (100) Building occupants and/or tenants have been informed of these procedures and are periodically reminded of how to locate responsible staff and where to obtain complaint forms.</p> <p>Notes: _____</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p><i>Building Air Quality</i>, Pages 15-17</p> <p style="text-align: center;">"</p> <p style="text-align: center;">"</p> <p style="text-align: center;">"</p> <p style="text-align: center;">"</p> <p style="text-align: center;">"</p> <p style="text-align: center;">"</p> <p style="text-align: center;">"</p> <p style="text-align: center;">"</p> <p><i>Building Air Quality</i>, Page 13</p> <p><i>Building Air Quality</i>, Page 14</p>

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